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AN APPRAISAL OF THE BOMBING OF NORTH VIETNAM

(THROUGH 16 JANUARY 1967)

JANUARY 1967

S-2034/AP-4

Prepared Jointly by
The Central Intelligence Agency
and
The Defense Intelligence Agency



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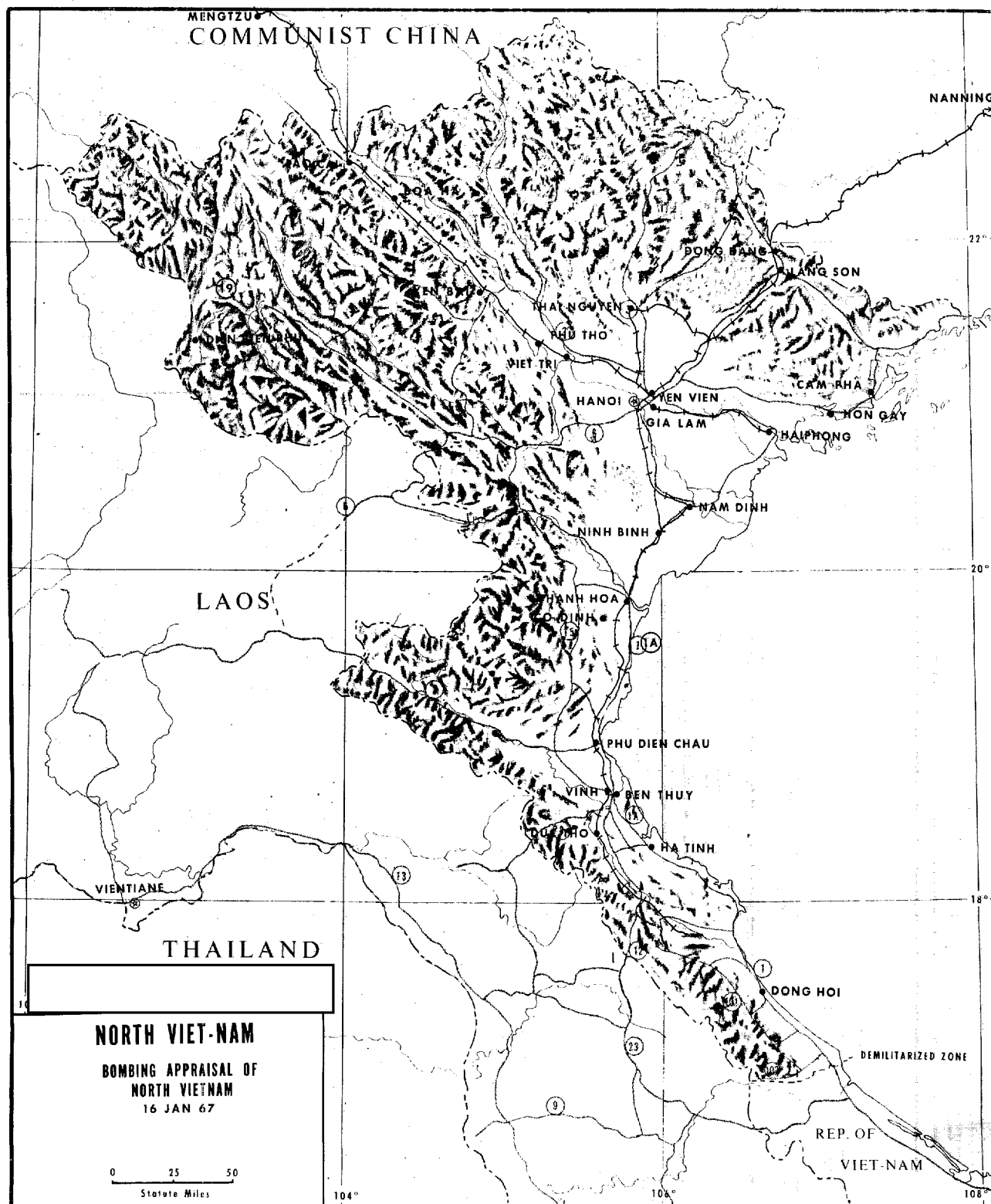
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AN APPRAISAL OF THE BOMBING OF NORTH VIETNAM THROUGH 16 JANUARY 1967

FOREWORD

This report is prepared on a monthly basis at the request of the Secretary of Defense for an evaluation of certain effects of the ROLLING THUNDER program. The report covers three general areas of concern: Effects on Military Targets; Leadership and Public Reactions; and Effects on the NVN Economy. The discussion of political effects is limited to those developments within North Vietnam which relate to Hanoi's attitude toward continuing the war and the effects the ROLLING THUNDER attack has on civilian morale in North Vietnam.

NORTH VIETNAMESE RAILROAD SYSTEM



AN APPRAISAL OF THE BOMBING OF NORTH VIETNAM
THROUGH 16 JANUARY 1967

SUMMARY

25X1 1. [] The ROLLING THUNDER program continued to concentrate on lines of communications (LOCs) during December and early January. Although unfavorable weather conditions continued to impede air operations and to limit the damage inflicted on the North Vietnamese transportation system, some significant localized disruptions of transport were obtained.

25X1 2. [] The bulk of the highway interdiction effort was against the principal roads south of the 20th parallel with most of the remaining effort in the northwest sector of the country. The highest concentration of air strikes was on the main roads from Vinh south to the DMZ. The mobilization of a large damage repair force of possibly 50,000 laborers has been required to maintain Route 1A in serviceable condition south of the 20th parallel.

25X1 3. [] The railroad system was generally operational throughout the period and with the exception of the Hanoi to Lao Cai and Vinh lines appears capable of meeting normal through traffic performance. The destroyed bridge near Viet Tri continued to be the primary restriction to the movement of through traffic on the Lao Cai line.

25X1 4. [] Recent activities on the waterways in the southern

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Panhandle region near Dong Hoi suggest that the North Vietnamese are probably increasing their utilization of inland water routes. This provides an alternate to the heavily interdicted road system and avoids exposure to US destroyer operations along the coast south of the 18th parallel.

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5. [] The North Vietnamese took advantage of the Christmas and New Year's truce periods to move supplies south to the DMZ area. During the 48-hour Christmas standdown of the ROLLING THUNDER program there was approximately a 20-fold increase in the normal coastal water traffic. It appears that the Communists elected to use the truce periods to maximum advantage in the over-all operation of their LOCs by using the more expedient and economical sea movement rather than making an extensive effort on the heavily interdicted inland routes.

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6. [] The North Vietnamese continue to develop their air defense system. However, the loss of nine MIG-21s -- over 30 per cent of the total MIG-21 inventory -- in air-to-air engagements during the period was a setback and temporarily reduced the capabilities of the North Vietnamese Air Force.

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7. [] The cumulative effects of the air strikes in North Vietnam have caused multiple management and logistic problems and have limited North Vietnams capability for substained large scale conventional military operations against South Vietnam.

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However, the North Vietnamese retain the capability to continue to support activities in South Vietnam and Laos at present or increased combat levels and force structures.

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8. [] Over the past several weeks the North Vietnamese leadership has attempted to bring home to the North Vietnamese population the fact that the war against the US is going to create additional hardships in the months ahead but has assured them that despite all difficulties "the Vietnamese people will be victorious." DRV Premier Pham Van Dong warned that they must face "fiercer battles" in the months ahead.

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9. [] Direct damage to the economy as a consequence of the air strikes was at a relatively low level during the reporting period. The cumulative effects of the bombings have not forced any radical change in the economic policy of North Vietnam, but considerable economic loss has been incurred. Nevertheless, the ability of the economy to supply the basic needs of the population and to provide support for the war has been made possible by infusions of foreign economic aid, selective restoration or replacement of destroyed or damaged facilities and equipment, reallocations within the labor force and more involuntary labor.

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10 [] Although many planned industrial goals have been revised downward since the start of the bombing, planned expansion or improvement of the industrial sector continues in some areas.

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Shipments of machinery and equipment for two coal mines, a mineral exploration project, and the Gia Lam freight car repair shops have continued.

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11. [] There is still no evidence that the loss of petroleum or petroleum storage facilities resulting from air strikes, has curtailed economic activity in North Vietnam. Petroleum on hand in North Vietnam at the end of 1966 probably was at about 80 days of supply. Evidence indicates that localized difficulties in the distribution of petroleum in Military Region IV were primarily the result of mismanagement rather than of shortages of petroleum or trucks in the region.

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12. [] Recent reports of cuts in staple food rations suggest that the normally tight food situation has deteriorated somewhat, although there are no indications that the situation has become critical. Official North Vietnamese statements suggest that the fall rice crop is below the average of some 2.8 million metric tons. Air attacks have contributed substantially, though indirectly, to this short-fall. The air strikes probably also continue to disrupt fishing activities.

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13. [] Cumulative measurable damage to economic and military facilities and equipment in North Vietnam inflicted by the ROLLING THUNDER program in 1965 and 1966 totals 190 million dollars of which about 120 million dollars were inflicted during

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1966. There are many other losses and costs to the economy and the military establishment which cannot be assigned meaningful values.

Effects on Military Targets

1. [] The ROLLING THUNDER program continued to concentrate on the lines of communications (LOCs) during December and early January. Unfavorable weather conditions over North Vietnam, associated with the southward movement of the northeast monsoon, continued to impede air operations. The North Vietnamese took advantage of the complete standdown of ROLLING THUNDER operations during the Christmas and New Year's truce periods and moved substantial amounts of supplies south to the DMZ area. Although there was less damage inflicted on the North Vietnamese transportation system than during the last reporting period, some significant localized effects were obtained. The NVN Air Force received a set back with the loss of nine MIG-21s in air-to-air combat in early January.

2. [] Transport capabilities in North Vietnam during the reporting period remained at a high level, and are probably even slightly improved over the previous period. The sortie rate continued to be relatively low and there was no significant interdiction of transportation in the central and northeastern parts of the country. The rail lines between Hanoi and Haiphong, Dong Dang, and Thai Nguyen have been open continuously for through rail service since mid-December. Strikes against the railroad yards at Yen Vien and Gia Lam during the first half of December did not interrupt through service on these lines for more than a day at a time. Strikes

against the Hanoi-Lao Cai rail line probably disrupted through service on the line for less than a week; however, the primary restriction to the movement of through traffic on the Lao Cai line continued to be the use of rail ferries at the destroyed bridge near Viet Tri. The Hanoi-Vinh line probably remained open during most of the period for limited through traffic. South of Duc Tho the greater part of the rail line remained interdicted; during almost all of 1966 its use was limited to flanged wheeled trucks and small flatcars between interdicted points.

25X1 3. [] The bulk of the highway interdiction effort was against the principal roads south of the 20th parallel with most of the remaining effort in the northwest sector. The highest concentration of air strikes was on the main roads from Vinh south to the DMZ -- Routes 1A, 101, 104. Some measure of the problem of keeping these roads in useable condition is the estimate that a labor force of possibly 50,000 is employed in repairing Route 1A, south of the 20th parallel. While this force is able to accomplish repairs in relatively short periods (less than 72 hours) within individual segments of the interdicted highway, the actual movement of cargoes has been considerably delayed. Many of the approximately 200 bridges along Route 1A have been replaced (some more than once) with temporary, lower-capacity structures or restricted ferry facilities, thus compounding the difficulties involved in keeping

this vital artery in operable condition. Strikes in the northwest sector disrupted traffic on Route 19, and may have kept a short segment of this road north of Dien Bien Phu closed during the last week of December.

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4. [] The recent waterway activity in the southern Panhandle region near Dong Hoi suggests that the North Vietnamese are probably increasing their utilization of inland water routes. This provides an alternate to using the heavily interdicted roads and being vulnerable to US destroyer operations along the coast south of the 18th parallel.

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5. [] The North Vietnamese took advantage of the Christmas and New Year's truce periods to move supplies south to the DMZ area. During the 48-hour Christmas standdown of the ROLLING THUNDER program there was approximately a 20-fold increase in the normal coastal water traffic -- indicating a major resupply effort. At least 15 steel hulled ships were included in the approximately 500 sightings.

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6. [] During the truce periods, the reconnaissance of North Vietnamese inland routes was greatly reduced -- poor weather conditions hampered photographic reconnaissance and the standdown of armed reconnaissance eliminated operational pilot reporting. Nevertheless the limited reconnaissance did detect trucks moving in convoys in larger numbers and in daylight hours -- particularly during the New Year's truce period -- indicating that the North

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Vietnamese took advantage of the bombing pause. To the extent observed, rail and inland waterway traffic followed normal patterns during the standdown. It appears that the Communists elected to use the truce periods to maximum advantage in the over-all operation of their LOCs by using the more expedient and economical sea movement rather than making an extensive effort on the heavily interdicted inland routes.

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7. [] The North Vietnamese continue to develop their air defense system. In air engagements, the downing of an F-105 by an air-to-air missile (AAM) was the first confirmed loss of a US aircraft to this type weapon. On nine other occasions during the month, AAMs were fired without inflicting damage. []

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[] The loss of nine MIG-21s -- over 30 per cent of the total MIG-21 inventory -- in air-to-air engagements during the period was a setback and temporarily reduced the capabilities of the North Vietnamese Air Force.

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8. [] The cumulative effects of the air strikes in North Vietnam have caused multiple management and logistic problems and have limited North Vietnams capability for substained large

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scale conventional military operations against South Vietnam. The North Vietnamese operations in support of the military effort in South Vietnam and Laos have been made more costly, more difficult, more complicated, and more time-consuming. However, the North Vietnamese retain the capability to continue to support activities in South Vietnam and Laos at present or increased combat levels and force structures.

Leadership and Public Reactions

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9. One indication of the seriousness with which the North Vietnamese leadership regards the bombing campaign is their effort over the past several weeks to bring home to the North Vietnamese population the fact that the war against the US is going to create additional hardships in the months ahead. The leaders, however, have assured them that despite all difficulties "the Vietnamese people will be victorious." This concept was heavily underscored in a series of year end pronouncements by leading regime figures including Party First Secretary Le Duan and Defense Minister Giap. In addition, at the annual meeting of the "anti-US, National Salvation Congress" held in early January similar statements were voiced by members of the leadership. Their attendance at this propaganda meeting in unusual numbers

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was an obvious effort to bolster the morale of the fighting forces in both North and South Vietnam. DRV Premier Pham Van Dong, for example, hailed the Vietnamese Communist's fighting spirit and their "brilliant victories" but warned that they must face "fiercer battles" in the months ahead.

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10. [] The apparent aim of these statements is to prepare the North Vietnamese for hard times while pointing out to them that their leaders are as determined as ever to press on with the war. In addition, such statements offer a further indication that the difficulties being encountered by the people have not had any softening effect on the regime's policy. There continues to be some evidence, however, that shortages of certain commodities and hardships associated with evacuation and dislocation are affecting the morale of the NVN populace, although not to any serious extent.

Effects on the Economy

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11. [] Direct damage to the economy as a consequence of the air strikes was at a relatively low level during the reporting period. The cumulative effects of the bombings have not forced any radical change in the economic policy of North Vietnam, but considerable economic loss has been incurred. Nevertheless, the ability of the economy to supply the basic needs of the population

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and to provide support for the war has been made possible by infusions of foreign economic aid, selective restoration or replacement of destroyed or damaged facilities and equipment, reallocations within the labor force and more involuntary labor.

25X1 12. [] The Council of Ministers met in December to review the accomplishments of the state economic plan for 1966 and to approve the plan for 1967. No qualitative or quantitative achievements of the 1966 plan have been announced, but the policies of the 1967 plan are almost identical with those for 1966. Economic development and increases in production are to be pressed with a view toward preserving the lives of the people and defending and increasing the economic and military capabilities of North Vietnam. This economic policy has put additional demands on much of the population although the regime has still been able to send several thousand students, technicians and workers to other Communist countries for training. The people's involuntary labor contribution to the State has been enlarged to cope with the wartime situation. During peacetime, the rural population was annually required to contribute to the State 25 days of labor, the urban population 12 days, and public servants six days. This involuntary contribution has now been increased by 20 to 25 per cent, and in addition these workers have been asked to contribute at least three more days to the State to help protect communication and

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transportation routes and to construct national defense and economic projects.

13. [] Although many planned industrial goals have been revised downward since the start of the bombing there is information which suggests that planned expansion or improvement of the industrial sector is continuing in certain areas. A North Vietnamese delegation was sent to Hungary at the end of December to discuss resumption of the expansion of the Thanh Hoa power plant and the construction of a proposed hand tool and weighing equipment factory. Shipments of machinery and equipment for two coal mines, a mineral exploration project, and the Gia Lam freight car repair shops have continued. Although aerial photography indicates that construction work on the Thac Ba hydroelectric power plant, a Soviet aid project, has been at least temporarily suspended, both specialists and equipment have continued to be sent to Thac Ba.

14. [] There is no evidence, as of mid-January 1967, that the loss of petroleum or petroleum storage facilities resulting from air strikes, has curtailed economic activity in North Vietnam.

Petroleum on hand in

North Vietnam at the end of 1966 probably was at about 80 days of supply. Evidence indicates that localized difficulties in the

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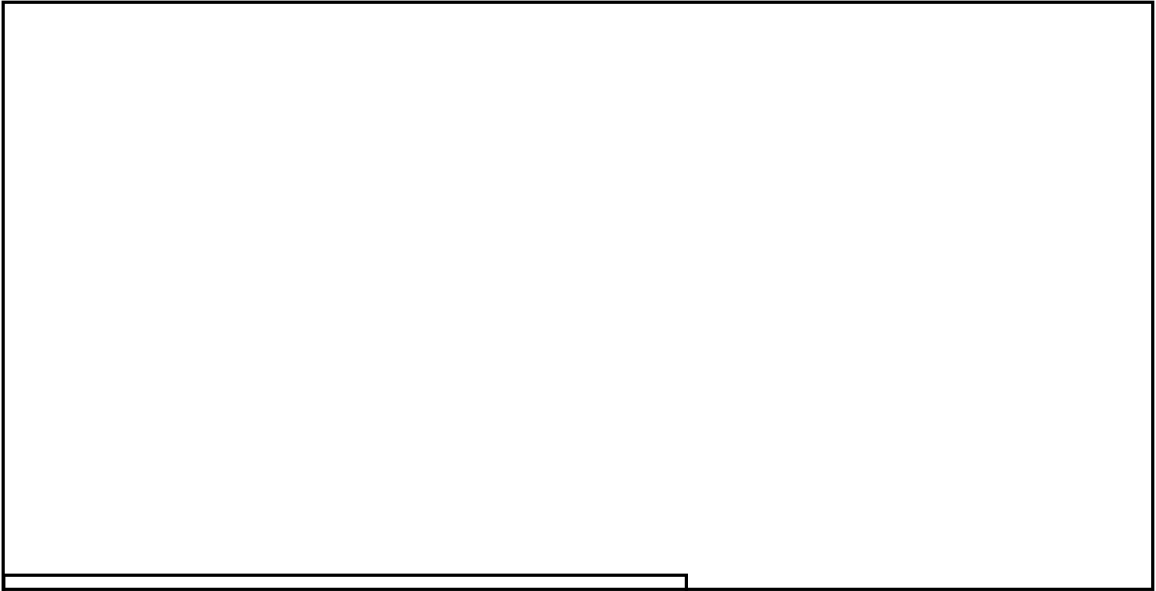
distribution of petroleum in Military Region IV were primarily the result of mismanagement rather than of shortages of petroleum or trucks in the region. More recent evidence also indicates that at least part of the localized shortages have been alleviated.

15. [] There were no strikes or restrikes against electric power facilities in North Vietnam during the reporting period, and the estimate of generating capacity out of operation remains at 59,000 kilowatts. Recent information, however, has provided a basis for further damage assessment of some of the power plants which were struck previously. This information indicates that the Ben Thuy plant probably cannot be put into partial operation before mid-1967. []

[] revealed that there had been no attempt to repair the 1965 damage to the Co Dinh power plant.

16. [] Recent reports of cuts in staple food rations suggest that the normally tight food situation has deteriorated somewhat, although there are no indications that the situation has become critical. Official North Vietnamese statements suggest that the fall rice crop -- normally about two-thirds of the annual harvest -- is below the average of some 2.8 million metric tons. Air attacks have contributed substantially, though indirectly, to this short-fall through the interruption of normal farming schedules, although poor growing conditions also were partly

responsible for the short-fall. The air strikes probably also continue to disrupt fishing activities, particularly in the waters off the coast of the three southern provinces.



Coal exports were the

lowest since September 1966 -- possibly as a result of additional bomb damage inflicted on Cam Pha in November. There continued to be no export of apatite.

18. [redacted] Cumulative measurable damage to economic and military facilities and equipment in North Vietnam inflicted by the ROLLING THUNDER program in 1965 and 1966 totals 190 million dollars. About 120 million dollars were accounted for by air strikes during 1966. Of the total, damage to the economy amounts to 120 million dollars and damage to the military establishment amounts to 70 million dollars. (See Tab B). In addition, there

continue to be many other losses and costs to the economy and the military establishment which cannot be assigned meaningful values. These include defense costs, the loss of production, lower productivity of labor and time lost from work as a consequence of civil defense measures.

RESULTS OF STRIKES ON NVN TARGETS a/ THRU 9 JANUARY 1967 TABLE 360

Fixed Targets	Total Targets			Targets Struck		% Of National Capacity		
	<u>c/</u>	<u>d/</u>		<u>d/</u>	<u>e/</u>	<u>b/</u>	Destroyed or inactive because of air strikes.	g/
	Capacity (X 1000)	Targeted No(*)	%	No(*)	%	No. Attacks		
Barracks	443 men	65	41.22	45	33.0	231	2391	22.68
Ammo Depots	112.6MT	18	100	13	72.2	52	1155	69.3
POL Storage *	133.5 MT	13	100	13	100	75	632	80.9
Supply Depots	10550SqFt	27	40.77	18	18	52	603	13.86
Power Plants	187 KW	20	94.5	8	46.6	34	283	31.6
Maritime Ports	7.8 ST/DY	8	95	6	44	24	231	16.2
Railroad Yards	33.7ST/DY	4	78	3	54	25	213	11.3
Explosive Plant	1 MT	1	100	1	100	3	28	71
Airfields	23			4		12	359	
Naval Bases	15			3		20	219	
Bridges	61			48		262	2657	
Commo Install	45			2		2	15	
Radar Sites	50			5		73	430	
SAM Sites	134			58		112	388	
Locks & Dams	8			2		2	10	
Ferries	34			11		7	44	

*JCS targets only; does not include dispersed storage.

Total Sorties: 9,868		Results <u>f/</u>	
Armed Recce Sorties		Destroyed	Damaged
93,208	Vessels	4011	6946
	Vehicles	2534	2348
	RR Stock	1487	1814

- a/ Assessments are based on best information received, will be refined as more accurate information becomes available.
- b/ Strike plus flak suppression sorties. Some applied to multiple targets; in this summary assigned to principal target.
- c/ National capacity in 1,000's where measurement shown.
- d/ Percentages of national capacity where appropriate.
- e/ Also numerous attacks during armed recce and other missions.
- f/ Also numerous installations, AA sites, bridges, etc, attacked and road and rail cuts made.
- g/ Per cent inactive due to dismantling or abandonment of facilities as a result of air strikes.
- (*) These columns are not additive, since the number of installations, both targeted and struck in some cases, apply to more than one category of targets. (i.e., barracks, supply and ammo depots).

NOTE: For comparative purposes.

US world-wide ammo storage capacity is 6,936,000 metric tons (CONUS 5,719,000 MT).
 US world-wide military POL storage capacity is 15,452,000 MT; national US commercial capacity is 151,325,000 MT; approximate average \$ value of 1 MT of POL product is \$28.
 US world-wide military supply depot covered storage space is 137,100,000 sq. ft. (CONUS 121,300,000 sq. ft).
 Total kilowatt capacity of power plants serving metropolitan areas: New York - 7.6 million; Chicago - 6 million; Washington (DC and Md/suburbs only) - 2.4 million.

Value of Damage to Economic and Military Facilities and
Equipment Attacked Under The ROLLING THUNDER Program
1965-1966

Economic Facilities and EquipmentMilitary Facilities and Equipment

<u>Direct Losses</u>	<u>Million US \$</u>	<u>Direct Losses</u>	<u>Million US \$</u>
Railroad/Highway Bridge	22.6*	Barracks	17.5*
Transportation Equipment	35.7	Ammunition Depots	4.7
Electric Power Plants	12.1	Supply Depots	3.6
Petroleum	6.4*	Airfields	.4*
Manufacturing Facilities	2.1	Radar and Communications	
Railroad Yards	1.3*	Sites	3.6
Maritime Ports	1.5*	SAM Sites	6.4*
Miscellaneous Armed		Naval Bases	1.6*
Reconnaissance	1.2	Aircraft	20.4***
		Naval Craft	8.9
Subtotal, Direct Losses	82.9	Miscellaneous Armed	
		Reconnaissance	3.0
<u>Indirect Losses</u>		Total, Direct	70.1
Exports	15.5		
Agriculture**	17.0		
Fishing	5.0		
Subtotal, Indirect Losses	37.5		
Total, Direct and Indirect	120.4		

		<u>Total</u>	
		Million US \$	
		Economic	120
		Military	70
			<u>190</u>

* Estimate is incomplete because of inadequate post-strike photography.

** It should be noted that losses of agricultural crops are arbitrarily attributed entirely to the indirect effects of the bombing. An unknown part of these losses is in fact due to weather and other natural causes.

*** The value of the nine MIG-21 fighter aircraft lost in early January will amount to an additional \$10 million.

TAB B

DISTRIBUTION LIST FOR DIA-CIA INTELLIGENCE REPORT
AN APPRAISAL OF THE BOMBING OF NORTH VIETNAM

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ASST SECDEF (Systems Analysis)	2 Cys
ASST SECDEF (PA)	1 Cy

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ACSFOR

ACSI

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ACSI-Eastern

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NAVY:

CHIEF OF NAVAL OPERATIONS	2 Cys
DNI	1 Cy
OP-921E	1 Cy
OP-922Y1	1 Cy
OP-922Y2	1 Cy
OP-92B1	1 Cy

AIR FORCE:

CHIEF OF STAFF	2 Cys
ACS, I/USAF	1 Cy
AFNINDE	6 Cys
AFNIEBB	1 Cy
AFISI (Spec Investigation)	1 Cy
AUL (Air Univ Library)	1 Cy

MARINE CORPS:

COMMANDANT	1 Cy
G-2	1 Cy

CINCPAC	2 Cys
CINCPACAF	1 Cy
CINCUSARPAC	1 Cy
CINCPACFLT	1 Cy
COMUSMACV	2 Cys
7AF	2 Cys
COMSEVENTHFLT	1 Cy
COMATKCARSTRIKEFORSEVENTHFLT (CTF 77)	1 Cy
CINCLANT	1 Cy
CINCSTRIKE	1 Cy
CINCSAC	1 Cy
SAC 544	1 Cy
CINCTAC	1 Cy
AFSTRIKE	1 Cy
CONTIC	1 Cy
CINCALCOM	1 Cy
CINCEUR	1 Cy
CINCUSAREUR	1 Cy
CINCUSAFE	1 Cy
CINCNAVEUR	1 Cy
CINCCONAD	1 Cy
CIA	

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DIA:

DIADR	1 Cy
DIADD	1 Cy
DIASC-1	1 Cy
JS	1 Cy
CO-2C	1 Cy
AP	1 Cy
AP-2	1 Cy
AP-2C2	10 Cys
AP-2D1	1 Cy
AP-2D2	1 Cy
AP-3	1 Cy
AP-4	1 Cy
AP-4A	1 Cy
AP-4A2 (Pent)	6 Cys
AP-4A2 (AHS)	4 Cys
AP-4B4	2 Cys
AP-4C	3 Cys
AP-7	2 Cys
AP-8	2 Cys
XX	1 Cy
JT	1 Cy

